

**A New Photurid Firefly, *Photuris missouriensis*  
sp. nov. (Coleoptera; Lampyridae,  
Photurinae.)**

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Twenty specimens of a *Photuris* recently sent to me by Mr. J. W. Green do not conform to any of Barber's (1951) species, and I am therefore describing it below as *Photuris missouriensis*, sp. nov. Nineteen of the specimens were males and one a female.

Type locality, Roaring River State Park, MISSOURI; collected on June 15, 1954, by J. W. Green.

Habitat Conditions: "In grassy field, with few trees near river, some swampy ground." (J. W. Green)

Holotype male in collection of the California Academy of Sciences.

Dimensions 12.7 mm long by 4.2 mm wide at elytral mid-length.

Pronotum 2.5 mm long by 2.8 mm wide; semi-elliptical but margins slightly curved inward in basal fourth. Disk convex, limits of convexity roughly parallel to the external edges; coarsely punctate; long and rather sparse, pale, diffuse villosity; color dark orange, with a short, narrow, longitudinal black vitta from the base to *ca.* one third length, and an indefinite brown mark at forward end of the orange area, extending narrowly to apex. Sides obliquely upturned from margins of disk; apical third nearly flat; transparent pale yellow mottled with irregular opaque ivory-colored flecks and bordered by a narrow transparent margin which is broadened somewhat apically. Angles rounded; a rather deep transverse submarginal groove between them along the base. There is a fringe of long hairs at the base of the disk extending over the base of the scutellum.

Scutellum narrowly rounded at apex; translucent yellow; scattered short pale hairs. Mesonotal plates dull opaque yellow.

Elytra 10.2 mm long, each 1.7 mm wide just back of base, then slightly constricted, then widening to 2.1 mm at midlength

and tapering to separately rounded but rather acute apices; no explanate margins. Sutural bead pronounced and pale from scutellum to midlength. Villosity fairly dense, pale, oblique. Ground color a translucent light brown, becoming darker and more opaque in the basal fourth, and appearing much darker over wings. Lateral border paler to apical fourth, and a pale vitta beginning at humerus, slightly approaching the suture, and becoming indistinguishable at about midlength. Epipleura short, merging with the elytral edge at about basal fourth. Surface rugose, with a very fine dotted appearance between the coarser rugosity; at least some of the hairs arise from these coarser particles.

Head: Frons and most of vertex yellow, somewhat brown under edge of pronotum. Eyes large, globular, black; 2.3 mm across and 0.6 mm between them at antennal sockets. Distal edge of clypeus tridentate, nearly black. Mandibles large and stout, *ca.* 0.76 mm across in closed position. Last article of maxillary palpus a dull brown, slightly curved conoid, flattened on the inner side; labial palpi dark yellow, the terminal article mitten-shaped or asymmetrically crescentic.

Antennae 7.5 mm long; 6th article the longest, 0.84 mm; becoming more slender from the 3d; very dark brown, bases of articles paler. Sockets small and pale.

Pro- and mesosterna dark yellow; metasternum brown.

Ventral abdominal segments 2 to 5 mostly dark brown, posterior edge of 5 yellow; 6 and 7 luminous, about one third longer than 5, and broadly emarginate; 8th small, with a median posterior point. Villosity long, dense, and appressed on thoracic sternum; short on abdominal segments, and very dense on 8th.

Coxae all yellow; legs partly yellow, but distal portions of femora and tibiae infusate. Posterior tarsi 3.3 mm long.

Aedeagus of the usual *Photuris* form.

Flashing Conduct: "Flying low just at top of vegetation; flash single, repeated continuously while flying at two or three second intervals." (J. W. Green)

The female allotype is generally similar; 11.7 mm long by 4.3 mm wide; pronotum without distinct transparent border.

Elytra with no trace of oblique vittae, but distinct, almost white, transparent lateral borders extending to apices; suture also pale to apices. Eyes smaller, 2.05 mm across and 0.7 mm between them. Antennae 6.35 mm long. Ventral abdominal segments 2 to 4 reddish brown; 5 brown in anterior two thirds, yellow in posterior third; 6 barely longer than 5, and feebly emarginate, with a long-elliptical luminous area and broad lateral and narrower posterior and anterior non-luminous borders; 7 somewhat longer than 6, much narrower, slightly emarginate, and with a similar but smaller luminous area.

The specimens varied from 11.25 to 13.7 mm long, averaging 12.6 by 4.2 mm. In 12 the black basal pronotal vitta was short, reaching only the midlength of the pronotum or slightly more, with a more or less indefinite median infuscation in the apical fourth; in the other 8 it was complete, or practically so, from the base to apical fourth, usually linear or narrow in the middle but in three specimens broadened so as to suggest a reduced form of the vitta in *P. versicolor*. Five specimens had no trace of a pale oblique vitta on the elytron, and in seven others this vitta was pale and short, becoming indistinguishable at about elytral midlength; in the remaining eight it was traceable to the apical third or more of the elytra. The pro- and mesosterna were yellow, while the metasternum varied from yellowish to reddish to dark brown. Ventral abdominal segments 2 to 4 were mostly dark brown, but in the males, the 5th varied from nearly entirely brown to mainly yellow with irregular brown patches.

Of the 18 specimens other than the holotype and allotype, 13 have been returned to the California Academy of Sciences as paratypes, and four deposited in the U. S. National Museum, one being retained in my collection.

It is almost impossible to find distinct and constant structural differences between the various species of North American *Photuris* of the *versicolor* group. The principal differences other than in flashing conduct, are in size, pronotal pigmentation, the elytral coloration sometimes, and in some cases the season of prevalence. The aedeagi of all species so far examined—both North American and those from habitats further south—are

almost identical in form and structure, though varying in size. As mentioned below, there are some differences in the distribution of the luminous tissue in some females. The superficial coloration varies intraspecifically to such an extent that physiologically different species overlap in this regard, and unless the flashing conduct is known, it is extremely difficult to distinguish them. The idea naturally arises as to whether some of these are valid species, or should be considered as subspecies, or even varieties. Aside from the *versicolor* group, *P. divisa*, *P. frontalis*, *P. congener*, and the subtropical immigrant *P. brunni-pennis*, are undoubtedly valid species, recognizable as such in spite of the absence of definite data on their flashing conduct. In *P. versicolor* the courtship signals and eventual mating have been witnessed by the writer quite frequently in pure colonies, and at least once when *P. hebes* was also in flight nearby; and exchange of signals and approach have been seen in a pure colony of *P. lucicrescens*. (This latter colony, near a bridge south of Newark, Del., has been in existence for at least 12 years; there are occasional *P. versicolor* invaders from the nearby fields, but the breeding population appears to remain constant.) Around Wilmington, *P. versicolor* appears first, around May 25-27, followed in a few days by *P. hebes*, and a week or ten days later *P. lucicrescens* appears and except for stray females of *versicolor*, persists later. *P. versicolor* var. *quadrifulgens* appears to be a true variety, and has been noted as an occasional form in several localities around Wilmington where the normal *versicolor* was in flight.

As I have recorded, Barber (1951, p. iv) could easily distinguish some of the species prevalent around Wilmington, and when specimens of these species were arranged together, there was a definite difference in appearance (McDermott, 1958, p. 28). In some cases the distribution of the luminous tissue in the female furnishes at least some clue to the species. In the female allotype of *P. missouriensis*, the luminous tissue is restricted to elliptical areas. The same is true of *P. versicolor* ♀, but the proportion of the ventral surface of the segment which is luminous is distinctly larger in the latter case. On the other

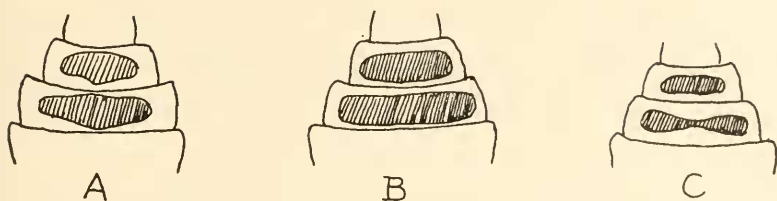


FIG. 1. Sterna of abdominal segments 6 and 7 of females, with luminous portions shaded. A. *Photuris missouriensis* sp. n. B. *Photuris versicolor* Fabr. C. *Photuris bethaniensis* McD.

hand, in the small *P. bethaniensis* (McDermott, 1953, p. 37) the luminous area on the 6th ventral is narrowed medially, leaving an elongated dumbbell shaped area for the luminous portion. The colors of the luminous and non-luminous portions of these segments are insufficiently distinct to photograph clearly, and the accompanying drawing, Figure 1, shows in A the appearance in *Photuris missouriensis*, in B that of *P. versicolor*, and in C, *P. bethaniensis*, the luminous portions being shaded.

#### LITERATURE CITED

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